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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,317	07/08/2003	Joseph S. Stam	AUTO 218	9360
28167	7590	04/27/2006	EXAMINER	
BRIAN J. REES GENTEX CORPORATION 600 NORTH CENTENNIAL STREET ZEELAND, MI 49464			GAGLIARDI, ALBERT J	
			ART UNIT	PAPER NUMBER
			2884	

DATE MAILED: 04/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/615,317

Applicant(s)

STAM ET AL.

Examiner

Albert J. Gagliardi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26, 27, 32-38 and 41-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26, 27, 32-38 and 41-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Comment on Submissions

1. The Amendment and Remarks filed 10 April 2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 26-27, 32-38 and 41-46 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 26, the claim as amended includes a limitation wherein the system is “capable of distinguishing vehicular (sic) light source from non-vehicular light sources.” The nature of this limitation is unclear.

The examiner notes that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP 2114. In this case, however, the limitations are rejected as indefinite because it is unclear what, if any, additional structure is suggested or implied by the recited capability.

The examiner further notes that, in a telephone interview with James Schultz on April 20, 2006 in an attempt to clarify the limitation, it was suggested that such structure responsible for the recited capability was the structure recited in paragraph 0049 of the specification. The examiner has reviewed the disclosure and disagrees that this structure could be responsible for the claimed capability.

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Paragraph 0049 recites:

[0049] Yet a further improvement is realized by pulsing the LED source synchronously with acquisition of the image sensor assembly. It is well established that the instantaneous current with which an LED is driven can be increased if the duty cycle is decreased. For example, if an LED is only driven at a 20% duty cycle, the current driving the LED, and thus the instantaneous intensity of the LED, can be increased approximately five times higher than if the LED is operated at 100% duty cycle. It is advantageous to use this relationship to increase the proportion of reflected light imaged to light emitted from other sources. Image acquisition is synchronized to acquire images only when the NIR source is activated. This may be accomplished by using an exposure time which is the duration of the NIR source activation time or by using a shutter. If the LED duty cycle is, for example, only 20% but the LED instantaneous intensity is about five times higher than it would be at 100% duty cycle, the image sensors exposure to the reflected light is the same as if the imager and LEDs operate continuously. However, the exposure to light emitted from other sources is reduced by a factor of five.

The examiner notes that while the reduced duty cycle of the LED source combined with the higher driving current allows for higher instantaneous source intensity such that the exposure to reflected light is relatively higher than exposure to light emitted from other sources, such limitations do not appear to allow the system to distinguish between vehicular light sources and non-vehicular light sources. The examiner notes that, for example, if the other light source produced an exposure at the detector that was brighter (i.e. five times brighter for the 20% duty cycle example) than the exposure at the detector from the reflected light, the sources would be indistinguishable.

In addition, the examiner notes that the same effect would also be achieved by using a brighter or larger LED light source, which would suggest that merely increasing the size of the light source (an otherwise routine and obvious design choice) would inherently allow for a system capable of distinguishing between vehicular light sources and non-vehicular light sources, though the mechanism for such an affect is unclear.

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Since the structural limitations responsible for the claimed capability are unclear, the examiner considers the claims to be indefinite. Additionally, since it would be improper to speculate on what limitations might be responsible for the claimed capability, the examiner has considered the limitation as not implying any structural limitation.

The remaining claims are indefinite on the basis of their dependency.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 26-27, 33, 35-38, 41 and 44-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Holtz *et al.* (US 6,552,342 B2).

Regarding claim 26, Holtz discloses (Fig. 1) a vehicular vision system, comprising an image sensor (3) and a light source (2), said light source is configured to emit light rays in the non-visible spectrum (col. 3, lines 27-30) to illuminate objects within a scene external to a controlled vehicle beyond an exterior surface of a windshield (see generally Fig. 1), wherein said light source is configured to operate in synchronous relationship with acquisition of images from said image sensor (col. 3, lines 56-61).

Regarding claim 27, Holtz discloses that the vehicular vision system may be configured for use in obstacle detection (see generally col. 1, lines 9-21).

Regarding claim 33, *Holtz* discloses that the light source is a narrow band emitter (col. 4, lines 7-9).

Regarding claim 35, *Holtz* discloses that the light source emits in the range from approximately 780nm to approximately 1100nm (col. 3, lines 28-30 and col. 4, lines 58-61).

Regarding claim 36, *Holtz* discloses that the light source is pulsed with momentary energy levels that exceed a one hundred percent duty cycle (see generally Fig. 2 comparing pulsed laser and continuous (i.e., one hundred percent duty cycle) laser).

Regarding claim 37 and 38, *Holtz* discloses that the image sensor further comprising a narrow band pass spectral filter (F) placed between said scene and said image sensor (see generally fig. 4; col. 4, lines 22-24).

Regarding claim 41, *Holtz* discloses that the light source is a near infrared laser (col. 3, lines 27-30).

Regarding claim 44, *Holtz* discloses that the in some embodiments the spectral filter may be a movable shutter (filter wheel) (col. 4, lines 58-61).

Regarding claim 45, *Holtz* discloses that the vehicular vision system may be configured for use in obstacle detection (see generally col. 1, lines 9-21).

Regarding claim 46, *Holtz* discloses that the spectral filter located between said image sensor and the scene is configured to block light rays other than the predominant spectral band of the light rays emitted by the source (col. 4, lines 22-24 and 58-63).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 32, 34, 42-43 and are rejected under 35 U.S.C. 103(a) as being unpatentable over *Holtz*.

Regarding claim 32 and 34, although *Holtz* discloses that the light source is preferably a laser diode source, those skilled in the art appreciate that the use of a wide variety of sources including both broadband sources including a filter and narrow band sources such as LEDs are well known and viewed as functionally equivalent light sources for use in vehicle vision systems, which, and absent some degree of criticality, would have been a matter of routine design choice within the skill of a person of ordinary skill in the art depending on the needs of the particular application.

Regarding claims 42-43, although *Holtz* discloses that the light source is preferably a laser diode source, those skilled in the art appreciate that the use of a wide variety of sources are well known in the art including for example discharge type sources such as high intensity discharge lamps. Those skilled in the art additionally appreciate that such sources typically

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include an AC ballast configured to strike an arc with high intensity. It would be obvious to synchronize the arc with the image sensor since *Holtz* discloses that the source is synchronized with the image sensor (see claim 26 above).

Response to Arguments

9. Applicant's arguments filed 10 April 2006 have been fully considered but they are not persuasive. As noted above, the structural limitations implied by the recited capability are unclear and have not been given any effect. Since there are no additional arguments related to the claims, the rejection is maintained.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (571) 272-2436. The examiner can normally be reached on Monday thru Friday from 10 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Albert J. Gagliardi
Primary Examiner
Art Unit 2884

AJG